

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
16 March 2006 (16.03.2006)

PCT

(10) International Publication Number  
**WO 2006/028397 A1**

(51) International Patent Classification<sup>7</sup>: **A61B 5/05**,  
G01S 13/02, 13/90

(21) International Application Number:  
PCT/NZ2005/000240

(22) International Filing Date:  
12 September 2005 (12.09.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/608,713 10 September 2004 (10.09.2004) US  
60/608,751 10 September 2004 (10.09.2004) US

(71) Applicant (for all designated States except US): **INDUSTRIAL RESEARCH LIMITED** [NZ/NZ]; Brooke House, 24 Balfour Road, Birkenhead, Auckland, 1033 (NZ).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **SIMPKIN, Ray, Andrew** [GB/NZ]; 61 Park Hill Road., Birkenhead, Auckland, 1310 (NZ).

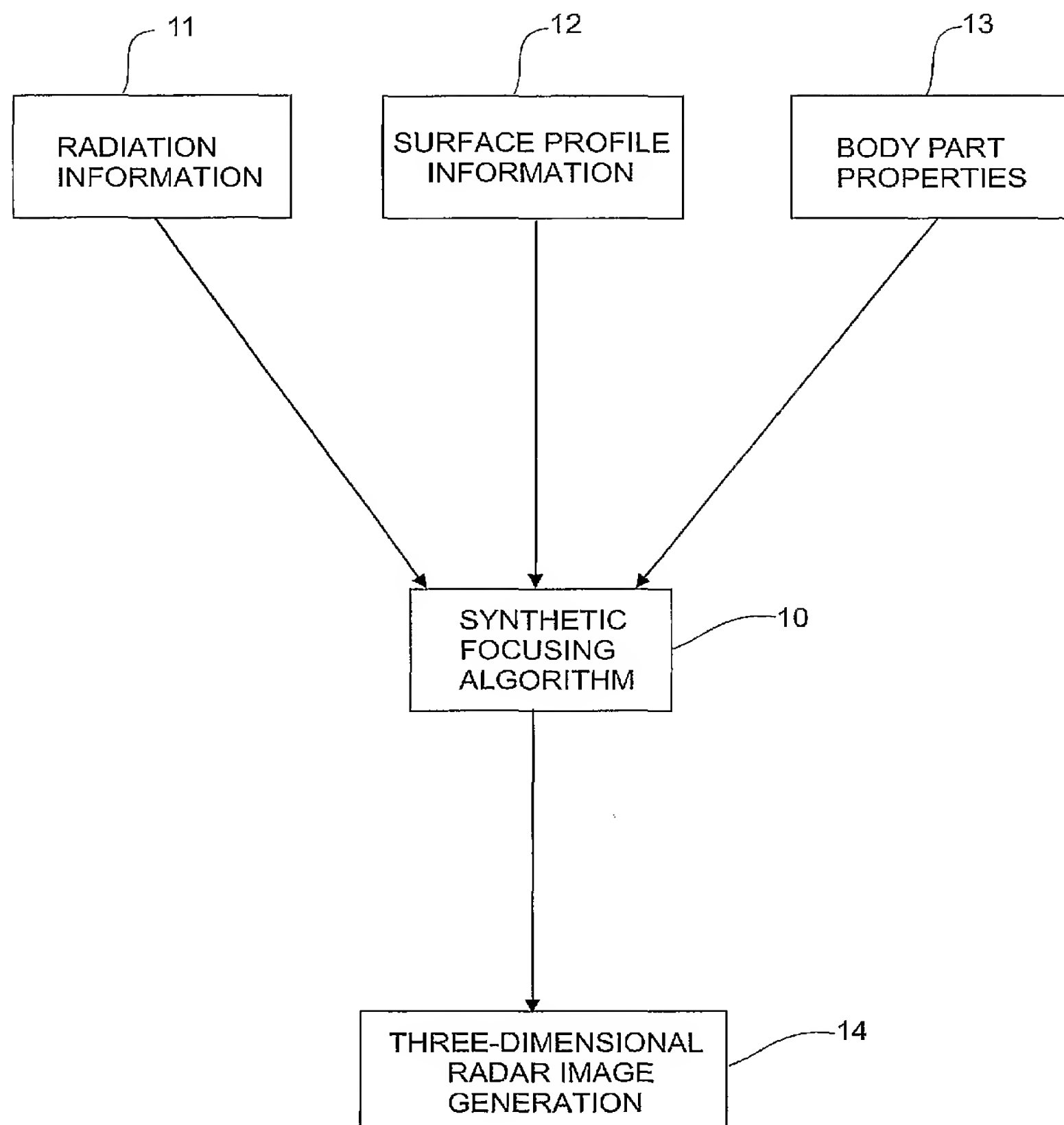
(74) Agents: **ADAMS, Matthew, D** et al.; A J Park, 6th Floor Huddart Parker Building, PO Box 949, Wellington, 6015 (NZ).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT,

[Continued on next page]

(54) Title: SYNTHETIC FOCUSING METHOD



(57) Abstract: A method of generating a three-dimensional radar image of a body part having multiple image points. The method comprises receiving radiation information (11) obtained at an array of scan locations relative to the body part, surface profile information (12) relating to the body part, and estimates of body part properties (13). The method further comprises constructing each image point by: determining the minimum optical paths between each scan location and the image point based on the scan locations, surface profile information and body part properties; phase-shifting the radiation information based on the minimum optical paths to equalise the radiation information; and then summing the equalised radiation information to provide a value for the image point. The 3D radar image of the body part is then generated based on the values of each of the image points.



RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*